

What is claimed is:

1 1. A broadcasting apparatus that broadcasts a specific
2 program to which a reproduction time period between a starting
3 time and a finishing time is specified, the reproduction being
4 performed by a receiving apparatus, the broadcasting apparatus
5 comprising:

6 allotment means for allotting a broadcasting bandwidth
7 for the reproduction time period to the specific program and
8 allotting a part of the broadcasting bandwidth for a preceding
9 time period immediately before the reproduction time period to
10 the specific program and the other part of the broadcasting
11 bandwidth to another program; and

12 transmission means, in accordance with the result of
13 allotment by the allotment means, for (a) repeatedly
14 transmitting program data of the other program while
15 transmitting program data of the specific program in the
16 preceding time period, and (b) repeatedly transmitting the
17 program data of the specific program in the reproduction time
18 period.

1 2. The broadcasting apparatus of Claim 1,

2 wherein the allotment means allots the broadcasting
3 bandwidth for the preceding time period so that the part of the
4 broadcasting bandwidth becomes narrower than the other part of
5 the broadcasting bandwidth, and

6 the preceding time period is longer than a time period
7 that is necessary for transmitting the program data of the

8 specific program at least once using the part of the bandwidth.

1 3. The broadcasting apparatus of Claim 1, further
2 comprising:

3 generation means for (a) generating a first instruction
4 that instructs the receiving apparatus to store the program data
5 of the specific program in a storing unit in the receiving
6 apparatus, and (b) generating a second instruction that
7 instructs the receiving apparatus to reproduce the program data
8 in case that the program data of the specific program has been
9 stored in the storing unit,

10 wherein the transmission means transmits a plurality of
11 the first instructions in the preceding time period and
12 transmits the second instruction at the starting time of the
13 reproduction time period.

1 4. The broadcasting apparatus of Claim 1, further
2 comprising:

3 storage means for storing as the program data of the
4 specific program (a) first contents data that makes up the
5 specific program and (b) second contents data that is different
6 from the first contents data in part,

7 wherein the transmission means transmits the first
8 contents data in the preceding time period and transmits the
9 second contents data in the reproduction time period of the
10 specific program.

1 5. The broadcasting apparatus of Claim 1,
2 wherein the transmission means further transmits a normal
3 program that includes a video stream and an audio stream,
4 the specific program has the program data that relates
5 to a commercial program which is inserted in the normal program,
6 and
7 the reproduction time period of the specific program is
8 the same as a broadcast time period of the commercial program.

1 6. The broadcasting apparatus of Claim 5,
2 wherein the allotment means allots the broadcasting
3 bandwidth for the preceding time period so that the part of the
4 broadcasting bandwidth becomes narrower than the other part of
5 the broadcasting bandwidth, and
6 the preceding time period is longer than a time period
7 that is necessary for transmitting the program data of the
8 specific program at least once using the part of the bandwidth.

1 7. The broadcasting apparatus of Claim 6, further
2 comprising:
3 generation means for (a) generating a first instruction
4 that instructs the receiving apparatus to store the program data
5 of the specific program in a storing unit in the receiving
6 apparatus, and (b) generating a second instruction that
7 instructs the receiving apparatus to reproduce the program data
8 in case that the program data of the specific program has been

9 stored in the storing unit,
 10 wherein the transmission means transmits a plurality of
 11 the first instructions in the preceding time period and
 12 transmits the second instruction at the starting time of the
 13 reproduction time period.

1 8. The broadcasting apparatus of Claim 7, further
 2 comprising:

3 storage means for storing as the program data of the
 4 specific program (a) first contents data that makes up the
 5 specific program and (b) second contents data that is different
 6 from the first contents data in part,

7 wherein the transmission means transmits the first
 8 contents data in the preceding time period and transmits the
 9 second contents data in the reproduction time period of the
 10 specific program.

1 9. A broadcasting apparatus that transmits a data
 2 broadcasting program and a first and a second specific programs
 3 which are inserted in the data broadcasting program, the
 4 broadcasting apparatus comprising:

5 allotment means for

6 (a) allotting a broadcasting bandwidth for a first time
 7 period and a second time period to the first specific program
 8 and the second specific program, the first time period and the
 9 second time period are included in a total time period between
 10 a starting time and a finishing time for broadcasting the data

broadcasting program, and

(b) allotting a part of the broadcasting bandwidth to the first and the second specific programs and the other part of the broadcasting bandwidth to the data broadcasting program for all of time periods other than the first and the second time periods in the total time period;

instruction generation means for generating a first storage instruction and a second storage instruction that instruct the receiving apparatus to store a program data for the first specific program and a program data for the second specific program in a storing unit in the receiving apparatus, respectively, and generating a first reproduction instruction and a second reproduction instruction that instruct a receiving apparatus to reproduce the program data for the first specific program and the program data for the second specific program, respectively, in case that the program data for the first specific program and the program data for the second specific program have been stored in the storing unit;

transmission means for repeatedly transmitting the program data of each of the data broadcasting program, the first specific program, and the second specific program in accordance with the result of allotment by the allotment means; and

control means for controlling the transmission means so as to transmit (a) a plurality of the first storage instructions before the first time period, (b) the first reproduction instruction at the starting time of the first time period, (c) a plurality of the second storage instructions before the second

38 time period, and (d) the second reproduction instruction at the
39 starting time of the second time period.

1 10. The broadcasting apparatus of Claim 9,
2 wherein the transmission means further transmits a normal
3 program that includes a video stream and an audio stream,
4 the first specific program and the second specific
5 program respectively have the program data that relates to a
6 first commercial program and a second commercial program which
7 are inserted in the normal program, and
8 the first time period and the second time period
9 respectively are the same as broadcast time periods of the first
10 commercial program and the second commercial program.

1 11. The broadcasting apparatus of Claim 10, further
2 comprising:
3 storage means for storing as the program data of the first
4 specific program (a) first contents data that makes up the first
5 specific program and (b) second contents data that is different
6 from the first contents data in part,
7 wherein the transmission means transmits the first
8 contents data in a time period other than the first time period
9 in the total time period, and transmits the second contents data
10 in the first time period.

1 12. A broadcasting apparatus that transmits a data
2 broadcasting program and a first and a second specific programs

which are inserted in the data broadcasting program, the
broadcasting apparatus comprising:

allotment means for

(a) allotting a broadcasting bandwidth for a first time period and a second time period to the first specific program and the second specific program, the first time period and the second time period are included in a total time period between a starting time and a finishing time for broadcasting the data broadcasting program, and

(b) allotting (1) a broadcasting bandwidth to the data broadcasting data program in the total time period except for the first time period and the second time period, (2) a part of the broadcasting bandwidth to the first specific program for a time period preceding to the first time period in the total time period, and (3) a part of the broadcasting bandwidth to the second specific program for a time period preceding to the second time period in the total time period;

instruction generation means for generating a first storage instruction and a second storage instruction that instruct a receiving apparatus to store a program data for the first specific program and a program data for the second specific program in a storing unit in the receiving apparatus, respectively, and generating a first reproduction instruction and a second reproduction instruction that instruct the receiving apparatus to reproduce the program data for the first specific program and the program data for the second specific program, respectively, in case that the program data for the

30 first specific program and the program data for the second
31 specific program have been stored in the storing unit;

32 transmission means for repeatedly transmitting the
33 program data of each of the data broadcasting program, the first
34 specific program, and the second specific program in accordance
35 with the result of allotment by the allotment means; and

36 control means for controlling the transmission means so
37 as to transmit (a) a plurality of the first storage instructions
38 before the first time period, (b) a plurality of the second
39 storage instructions before the second time period, (c) the
40 first reproduction instruction at the starting time of the first
41 time period, and (d) the second reproduction instruction at the
42 starting time of the second time period.

1 13. The broadcasting apparatus of Claim 12,

2 wherein the transmission means further transmits a normal
3 program that includes a video stream and an audio stream,
4 the first specific program and the second specific
5 program respectively have the program data that relates to a
6 first commercial program and a second commercial program which
7 are inserted in the normal program, and

8 the first time period and the second time period
9 respectively are the same as broadcast time periods of the first
10 commercial program and the second commercial program.

1 14. The broadcasting apparatus of Claim 13, further
2 comprising:

3 storage means for storing as the program data of the first
4 specific program (a) first contents data that makes up the first
5 specific program and (b) second contents data that is different
6 from the first contents data in part,

7 wherein the transmission means transmits the first
8 contents data in a time period preceding to the first time period
9 in the total time period, and transmits the second contents data
10 in the first time period.

1 15. A broadcasting method for broadcasting a specific program
2 to which a reproduction time period between a starting time and
3 a finishing time is specified, the reproduction being performed
4 by a receiving apparatus, the broadcasting method comprising
5 the steps of:

6 an allotment step for allotting a broadcasting bandwidth
7 for the reproduction time period to the specific program and
8 allotting a part of the broadcasting bandwidth for a preceding
9 time period immediately before the reproduction time period to
10 the specific program and the other part of the broadcasting
11 bandwidth to another program; and

12 a transmission step, in accordance with the result of
13 allotment in the allotment step, for (a) repeatedly transmitting
14 program data of the other program while transmitting program
15 data of the specific program in the preceding time period, and
16 (b) repeatedly transmitting the program data of the specific
17 program in the reproduction time period.

16. A broadcasting method for broadcasting a data
broadcasting program and a first specific program and a second
specific program which are inserted in the data broadcasting
program, the broadcasting method comprising the steps of:

an allotment step for

(a) allotting a broadcasting bandwidth for a first time
period and a second time period to the first specific program
and the second specific program, the first time period and the
second time period are included in a total time period between
a starting time and a finishing time for broadcasting the data
broadcasting program, and

(b) allotting a part of the broadcasting bandwidth to the
first and the second specific programs and the other part of
the broadcasting bandwidth to the data broadcasting program for
all of time periods other than the first and the second time
periods in the total time period;

an instruction generation step for generating a first
storage instruction and a second storage instruction that
instruct the receiving apparatus to store a program data for
the first specific program and a program data for the second
specific program in a storing unit in the receiving apparatus,
respectively, and generating a first reproduction instruction
and a second reproduction instruction that instruct a receiving
apparatus to reproduce the program data for the first specific
program and the program data for the second specific program,
respectively, in case that the program data for the first
specific program and the program data for the second specific

28 program have been stored in the storing unit; and
29 a transmission step for transmitting (a) a plurality of
30 the first storage instructions before the first time period,
31 (b) the first reproduction instruction at the starting time of
32 the first time period, (c) a plurality of the second storage
33 instructions before the second time period, and (d) the second
34 reproduction instruction at the starting time of the second time
35 period, while repeatedly transmitting the program data of each
36 of the data broadcasting program, the first specific program,
37 and the second specific program in accordance with the result
38 of allotment in the allotment step.

1 17. A broadcasting method for broadcasting a data
2 broadcasting program and a first specific program and a second
3 specific program which are inserted in the data broadcasting
4 program, the broadcasting method comprising the steps of:

5 an allotment step for

6 (a) allotting a broadcasting bandwidth for a first time
7 period and a second time period to the first specific program
8 and the second specific program, the first time period and the
9 second time period are included in a total time period between
10 a starting time and a finishing time for broadcasting the data
11 broadcasting program, and

12 (b) allotting (1) a broadcasting bandwidth to the data
13 broadcasting data program in the total time period except for
14 the first time period and the second time period, (2) a part
15 of the broadcasting bandwidth to the first specific program for

1 18. A program recording medium which is readable for a
2 computer in a broadcasting apparatus, the broadcasting
3 apparatus broadcasts a specific program to which a reproduction
4 time period between a starting time and finishing time is
5 specified, the reproduction being performed by a receiving
6 apparatus, a computer program embodied on the program recording
7 medium has the computer conduct the steps of:

8 an allotment step for allotting a broadcasting bandwidth
9 for the reproduction time period to the specific program and
10 allotting a part of the broadcasting bandwidth for a preceding
11 time period immediately before the reproduction time period to
12 the specific program and the other part of the broadcasting
13 bandwidth to other program; and

14 a transmission step, in accordance with the result of
15 allotment in the allotment step, for (a) repeatedly transmitting
16 program data of the other program while transmitting program
17 data of the specific program in the preceding time period, and
18 (b) repeatedly transmitting the program data of the specific
19 program in the reproduction time period.

1 19. A program recording medium which is readable for a
2 computer in a broadcasting apparatus, the broadcasting
3 apparatus transmits a data broadcasting program and a first and
4 a second specific programs which are inserted in the data
5 broadcasting program, a computer program embodied on the
6 program recording medium has the computer conduct the steps of:

7 an allotment step for

8 (a) allotting a broadcasting bandwidth for a first time
9 period and a second time period to the first specific program
10 and the second specific program, the first time period and the
11 second time period are included in a total time period between
12 a starting time and a finishing time for broadcasting the data
13 broadcasting program, and

14 (b) allotting a part of the broadcasting bandwidth to the
15 first and the second specific programs and the other part of
16 the broadcasting bandwidth to the data broadcasting program for
17 all of time periods other than the first and the second time
18 periods in the total time period;

19 an instruction generation step for generating a first
20 storage instruction and a second storage instruction that
21 instruct the receiving apparatus to store a program data for
22 the first specific program and a program data for the second
23 specific program in a storing unit in the receiving apparatus,
24 respectively, and generating a first reproduction instruction
25 and a second reproduction instruction that instruct a receiving
26 apparatus to reproduce the program data for the first specific
27 program and the program data for the second specific program,
28 respectively, in case that the program data for the first
29 specific program and the program data for the second specific
30 program have been stored in the storing unit; and

31 a transmission step for transmitting (a) a plurality of
32 the first storage instructions before the first time period,
33 (b) the first reproduction instruction at the starting time of
34 the first time period, (c) a plurality of the second storage

35 instructions before the second time period, and (d) the second
36 reproduction instruction at the starting time of the second time
37 period, while repeatedly transmitting the program data of each
38 of the data broadcasting program, the first specific program,
39 and the second specific program in accordance with the result
40 of allotment in the allotment step.

1 20. A program recording medium which is readable for a
2 computer in a broadcasting apparatus, the broadcasting
3 apparatus transmits a data broadcasting program and a first and
4 a second specific programs which are inserted in the data
5 broadcasting program, a computer program embodied on the
6 program recording medium has the computer conduct the steps of:
7 an allotment step for
8 (a) allotting a broadcasting bandwidth for a first time
9 period and a second time period to the first specific program
10 and the second specific program, the first time period and the
11 second time period are included in a total time period between
12 a starting time and a finishing time for broadcasting the data
13 broadcasting program, and
14 (b) allotting (1) a broadcasting bandwidth to the data
15 broadcasting data program in the total time period except for
16 the first time period and the second time period, (2) a part
17 of the broadcasting bandwidth to the first specific program for
18 a time period preceding to the first time period in the total
19 time period, and (3) a part of the broadcasting bandwidth to
20 the second specific program for a time period preceding to the

time and finishing time is specified, the reproduction being performed by a receiving apparatus, the program has the computer conduct the steps of:

an allotment step for allotting a broadcasting bandwidth for the reproduction time period to the specific program and allotting a part of the broadcasting bandwidth for a preceding time period immediately before the reproduction time period to the specific program and the other part of the broadcasting bandwidth to other program; and

a transmission step, in accordance with the result of allotment in the allotment step, for (a) repeatedly transmitting program data of the other program while transmitting program data of the specific program in the preceding time period, and (b) repeatedly transmitting the program data of the specific program in the reproduction time period.

22. A program that is readable for a computer in a broadcasting apparatus, the broadcasting apparatus transmits a data broadcasting program and a first and a second specific programs which are inserted in the data broadcasting program, the program has the computer conduct the steps of:

an allotment step for

(a) allotting a broadcasting bandwidth for a first time period and a second time period to the first specific program and the second specific program, the first time period and the second time period are included in a total time period between a starting time and a finishing time for broadcasting the data

12 broadcasting program, and

13 (b) allotting a part of the broadcasting bandwidth to the
14 first and the second specific programs and the other part of
15 the broadcasting bandwidth to the data broadcasting program for
16 all of time periods other than the first and the second time
17 periods in the total time period;

18 an instruction generation step for generating a first
19 storage instruction and a second storage instruction that
20 instruct the receiving apparatus to store a program data for
21 the first specific program and a program data for the second
22 specific program in a storing unit in the receiving apparatus,
23 respectively, and generating a first reproduction instruction
24 and a second reproduction instruction that instruct a receiving
25 apparatus to reproduce the program data for the first specific
26 program and the program data for the second specific program,
27 respectively, in case that the program data for the first
28 specific program and the program data for the second specific
29 program have been stored in the storing unit; and

30 a transmission step for transmitting (a) a plurality of
31 the first storage instructions before the first time period,
32 (b) the first reproduction instruction at the starting time of
33 the first time period, (c) a plurality of the second storage
34 instructions before the second time period, and (d) the second
35 reproduction instruction at the starting time of the second time
36 period, while repeatedly transmitting the program data of each
37 of the data broadcasting program, the first specific program,
38 and the second specific program in accordance with the result

39 of allotment in the allotment step.

1 23. A program that is readable for a computer in a broadcasting
2 apparatus, the broadcasting apparatus transmits a data
3 broadcasting program and a first and a second specific programs
4 which are inserted in the data broadcasting program, the program
5 has the computer conduct the steps of:

6 an allotment step for

7 (a) allotting a broadcasting bandwidth for a first time
8 period and a second time period to the first specific program
9 and the second specific program, the first time period and the
10 second time period are included in a total time period between
11 a starting time and a finishing time for broadcasting the data
12 broadcasting program, and

13 (b) allotting (1) a broadcasting bandwidth to the data
14 broadcasting data program in the total time period except for
15 the first time period and the second time period, (2) a part
16 of the broadcasting bandwidth to the first specific program for
17 a time period preceding to the first time period in the total
18 time period, and (3) a part of the broadcasting bandwidth to
19 the second specific program for a time period preceding to the
20 second time period in the total time period;

21 an instruction generation step for generating a first
22 storage instruction and a second storage instruction that
23 instruct a receiving apparatus to store a program data for the
24 first specific program and a program data for the second
25 specific program in a storing unit in the receiving apparatus,

26 respectively, and generating a first reproduction instruction
27 and a second reproduction instruction that instruct the
28 receiving apparatus to reproduce the program data for the first
29 specific program and the program data for the second specific
30 program, respectively, in case that the program data for the
31 first specific program and the program data for the second
32 specific program have been stored in the storing unit; and
33 a transmission step for transmitting (a) a plurality of
34 the first storage instructions before the first time period,
35 (b) a plurality of the second storage instructions before the
36 second time period, (c) the first reproduction instruction at
37 the starting time of the first time period, and (d) the second
38 reproduction instruction at the starting time of the second time
39 period, while repeatedly transmitting the program data of each
40 of the data broadcasting program, the first specific program,
41 and the second specific program in accordance with the result
42 of allotment in the allotment step.